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October 3, 2001

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## VIA HAND DELIVERY

Magalie Roman Salas  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, DC 20554

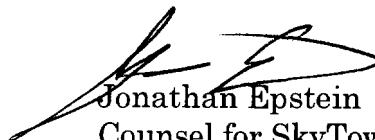
RE: Allocation and Designation of Spectrum for Fixed Satellite Services,  
Further Notice of Proposed Rule Making  
IB Docket 97-95/RM 88-11

Dear Ms. Salas:

Transmitted herewith, on behalf of SkyTower, Inc., is an original and four (4) copies of its reply comments with respect to the Further Notice of Proposed Rule Making in the above referenced proceeding.

An extra copy of the filing is enclosed. Please date-stamp the extra copy and return it to the courier for return to me. Please direct any correspondence concerning this filing to the undersigned counsel.

Respectfully submitted,

  
Jonathan Epstein  
Counsel for SkyTower, Inc.

Enclosure

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**OCT - 3 2001**

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY**

In the Matter of

Allocation and Designation of Spectrum for  
Fixed-Satellite Services in the 37.5-38.5 GHz,  
40.5-41.5 GHz and 48.2-50.2 GHz Frequency  
Bands; Allocation of Spectrum to Upgrade Fixed  
and Mobile Allocations in the  
40.5-42.5 GHz Frequency Band; Allocation of  
Spectrum in the 46.9-47.0 GHz Frequency Band  
for Wireless Services; and Allocation of Spectrum  
in the 37.0-38.0 GHz and  
40.0-40.5 GHz for Government Operations

IB Docket No. 97-95

RM-8811

**SKYTOWER, INC.'S REPLY COMMENTS**

Marvin Rosenberg  
Jonathan Epstein  
Holland & Knight LLP  
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(202) 955-3000  
*Counsel for SkyTower, Inc.*

**October 3, 2001**

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Allocation and Designation of Spectrum for	)	
Fixed-Satellite Services in the 37.5-38.5 GHz,	)	
40.5-41.5 GHz and 48.2-50.2 GHz Frequency	)	
Bands; Allocation of Spectrum to Upgrade Fixed	)	IB Docket No. 97-95
and Mobile Allocations in the	)	
40.5-42.5 GHz Frequency Band; Allocation of	)	RM-8811
Spectrum in the 46.9-47.0 GHz Frequency Band	)	
for Wireless Services; and Allocation of Spectrum	)	
in the 37.0-38.0 GHz and	)	
40.0-40.5 GHz for Government Operations	)	
	)	
	)	

**SKYTOWER, INC.'S REPLY COMMENTS**

SkyTower, Inc. ("SkyTower"), by its counsel, submits its Reply to comments filed by several participants in the FCC's Further Notice of Proposed Rule Making ("FNPRM") in the above-captioned matter. SkyTower makes this filing to clarify the record before the Commission regarding use of spectrum by High Altitude Platforms (HAPS).

**PRELIMINARY STATEMENT**

SkyTower is a company that intends to launch stratospheric platforms for telecommunications uses. Using technology developed by its parent company, AeroVironment Inc., NASA, and others, SkyTower expects to provide telecommunications companies with a versatile and cost-effective platform for a wide-range of telecommunications services. The SkyTower platform is an

unmanned, solar-electric aircraft that can remain stationary over a region at high-altitudes for up to six-months or longer, carrying a payload for telecommunications services such as direct broadcast, fixed-broadband applications, and third generation mobile applications. The SkyTower platform itself recently set new high-altitude flight records and received substantial press coverage. See attached article and NASA letter.

### COMMENTS

To assure the Commission of the continued active development of HAPS technology and in response to certain comments filed in this proceeding that fail to recognize the current state of the HAPS industry, SkyTower submits its reply comments to clarify the record before the Commission. Further, SkyTower objects in principle to those comments that seek exclusive allocation of the 47 GHz spectrum for a particular type of service.

In the FNPRM, the Commission considers various alternatives for adding fixed and mobile allocations for non-government use of the 42 GHz band (42.5-43.5 GHz). FNPRM, ¶¶ 28-31. The rulemaking notes that the 42 GHz band was made exclusively governmental as part of a spectrum swap with NTIA to free up the 47 GHz band (47.2-48.2 GHz) for HAPS. Several commentors advocate that both the 42 GHz band and the 47 GHz band be shared by government and non-government users. They note that HAPS operators have abandoned their interest in developing a service in the 47 GHz band.<sup>1</sup> Similarly one commentor states that “the most

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<sup>1</sup> See Comments of Spectrum Astro, Inc., p. 7; Comments of Hughes Communication, Inc., pp. iii, 5; Comments of Satellite Industry Association, p. 2.

active proponent of stratospheric platform use has withdrawn its interest in developing service in the 47.2-48.2 GHz band . . .” Comments of the Boeing Company, pp. 5-6. Two commentors further suggest that the 47 GHz band should be allocated exclusively for satellite uses.<sup>2</sup>

A. Current HAPS Operators Seek To Serve As Platforms Not as a Separate Service.

HAPS operators, such as SkyTower, do not seek to establish a specific HAPS service in a particular band, but rather view HAPS as multi-purpose platforms that can be used by operators in existing services. The comments that HAPS operators have “abandoned” their interest in developing a service in the 47 GHz band, fails to recognize the current state of the HAPS industry.

In 1996, Sky Station International, Inc. (“SSI”) filed a petition for rulemaking seeking authorization for the 47 GHz band to be used for a proposed unmanned, high-altitude, lighter-than-air platforms service.<sup>3</sup> Although a rulemaking proceeding was initiated in 1998, it was terminated in December 2000 on petition from SSI, which had altered its plans. *See 47 GHz Proceeding*, ¶ 7. While SSI and its approach may have been the HAPS approach before the Commission in the late

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<sup>2</sup> See Comments of the Boeing Company, pp. 4-5; Comments of Hughes Communications, Inc., p 5.

<sup>3</sup> See *Amendment to Part 27 of the Commission’s Rules to Revise Rules for Services in the 2.3 GHz Band and to include Licensing of Services in the 47 GHz band*, Order, ¶ 2, FCC 00-415 (Released Dec. 8, 2000) (hereinafter *47 GHZ proceeding*).

1990s, there are now several companies, including SkyTower, pursuing alternative strategies for deploying HAPS.

Rather than seeking a separate allocation to create a new service, SkyTower believes that HAPS technology can best serve the public interest by augmenting or complementing existing authorized services. FCC policies of encouraging new technologies, maximizing efficient use of spectrum, and promoting technologies that can serve rural and underserved areas all support this approach.

Future HAPS deployment may likely take the form of collaborative efforts with existing service providers, such as New ICO's proposal to augment its mobile satellite signals using HAPS or towers.<sup>4</sup> Alternatively, a HAPS operator could acquire licenses from an existing operator to provide a particular service via HAPS. The FCC's recent order waiving certain technical requirements to allow Space Data Corporation to operate its expendable balloon-based HAPS system in the narrowband PCS service follows this latter approach.<sup>5</sup> A third option would be some form of leasing, franchising, or joint operating agreement supported by the

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<sup>4</sup> See *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz band, the L-Band, and the 1.6/2.4 GHz Band*, Notice of Proposed Rulemaking, ¶ 10, FCC 01-225 (Adopted Aug. 9, 2001) (hereinafter "*Flexible Delivery NPRM*") (describing the ICO proposal to use towers or High Altitude Long Endurance (HALE) platform, a term synonymous with HAPS, to allow ICO to provide a better service).

<sup>5</sup> See *Petition for Declaratory Ruling, a Clarification or, in the Alternative, a Waiver of Certain Narrowband Personal Communications Services (PCS) Rules as they Apply to a High-Altitude Balloon-Based Communications System*, Memorandum Opinion and Order, DA 01-2132, (Adopted Sept. 11, 2001) (hereinafter "*Waiver Order*").

Commission's policies on promoting efficient spectrum use.<sup>6</sup> In these models, interference issues would need to be addressed, but can be minimized.<sup>7</sup>

SkyTower supports the Commission's recent initiatives and orders discussed above that promote flexible use of spectrum and technological innovation. Further, SkyTower believes that HAPS has unique characteristics that make it an efficient platform for providing service to rural and underserved areas, and to act as a gap-filler to augment other platforms. The Commission should take these facts into consideration in its final order.

B. There is No reason to Designate the 47 GHz Band for Exclusive Satellite Use.

While SkyTower has no objection to the use of the 47 GHz band by satellite operators, designating this band exclusively for satellite use to the exclusion of HAPS is beyond the scope of the Commission's proposed alternatives in this rulemaking and is counter to the flexible uses contemplated by the Commission. In fact, in other bands, satellite operators have specifically sought to augment their services with HAPS or terrestrial platforms. In the MSS band, as previously pointed out, New ICO seeks to use HAPS or tower augmentation. Motient proposes to use terrestrial base stations. *See Flexible Delivery NPRM*, ¶¶ 10, 15. More recently, the Commission granted initial approval for Sirius Satellite Radio and XM

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<sup>6</sup> See *Principles for Promoting the Efficient Use of Spectrum by Encouraging Development of Secondary Markets*, Policy Statement, FCC-00-401, 22 C.R. 791 (Adopted Nov. 9, 200) (hereinafter "*Policy Statement*").

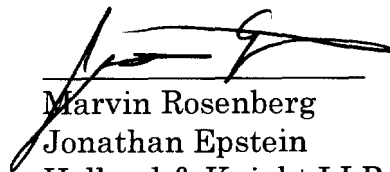
<sup>7</sup> For example, in the *Waiver Order*, the FCC notes that Space Data would not cause co-channel interference because it will presumably be the exclusive licensee on the channels on which it operates; further that it had adequately demonstrated that it would not cause interference to PCS providers operating on adjacent channels. *Waiver Order*, ¶ 15, 16.

Radio to augment their signals with terrestrial transmitters.<sup>8</sup> Therefore, SkyTower sees no reason to allocate this spectrum for exclusive use by a single technology.

### CONCLUSION

SkyTower requests the Commission take these reply comments under advisement in its decision making process in this proceeding.

Respectfully submitted,



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(202) 955-3000

*Counsel for SkyTower, Inc.*

October 3, 2001

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<sup>8</sup> See *Sirius Satellite Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, Order and Authorization, DA 01-2171 (Adopted Sept. 17, 2001); *XM Radio, Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters*, Order and Authorization, DA 01-2172 (Adopted Sept. 17, 2001).



# Los Angeles Times

On The Internet: WWW.LATIMES.COM

TUESDAY, AUGUST 14, 2001

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## Report A Botched of Lee Sp

Inquiry: For years, FBI and Energy Department pursued a flawed case against scientist they suspected of espionage for China, review finds.

By ERIC LICHTBLAU  
this star writer

WASHINGTON — Federal authorities in the Wen Ho Lee espionage case "investigated the wrong crime" for nearly three years and served in too aggressively on the Los Alamos nuclear scientist as the prime suspect, according to a government report released Monday.

Investigators ignored evidence that might have led them in other directions, mischaracterized their findings and relied on scientific analysts with suspect credentials, the long-awaited Justice Department review found.

The scathing collection of critics in the report says investigators "may



Remote-controlled Hellcat aircraft, developed by Mojave's Aeroflynn, ascended to 33,000 feet Monday in a flight from Hawaii.

**Solar Plane**  
**Israeli Army Invades**  
**Town in West Bank**  
**Record Books**

COLUMN ONE

San Jose  
Almost

A

# Solar Plane Climbs Into Record Books

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By PETER PAE

TIMES STAFF WRITER

An elongated flying wing, covered with solar panels and powered by 14 propeller motors not much stronger than hair dryers, climbed to 96,500 feet Monday, shattering a flight record that for more than a quarter century seemed unbreakable.

The remote-controlled Helios aircraft took more than seven hours, lumbering at a maximum speed of 23 mph, to reach the height, an aviation feat no jet or propeller airplane has ever accomplished.

The historic flight, rather than aiming only for an entry in a record book, demonstrated technology that could enable solar-powered planes to stay aloft for months. Fleets of such aircraft could carry global communications at lower cost than today's satellites.

**Please see HELIOS, A13**

*'We managed to climb above the cloud coverage. We are so relieved!'*

## HELIOS: Propeller Plane Sets Record for Altitude

Continued from A1

Helios' accomplishment also underscores Southern California's continuing leadership in aircraft design, being only the latest craft built here to achieve a major aviation record.

At an altitude of about 100,000 feet, the sky is black, the curvature of Earth is clearly discernible and the air so thin—only one-hundredth its density at sea level—it is incapable of sustaining the flight of any conventional airplane.

The highest reported altitude by an airplane before Monday was achieved by the jet-powered SR-71 spy plane, the world's fastest jet. The plane, built in Burbank in the 1960s, flew to 85,068 feet in July 1976. Only short-duration rockets have flown higher.

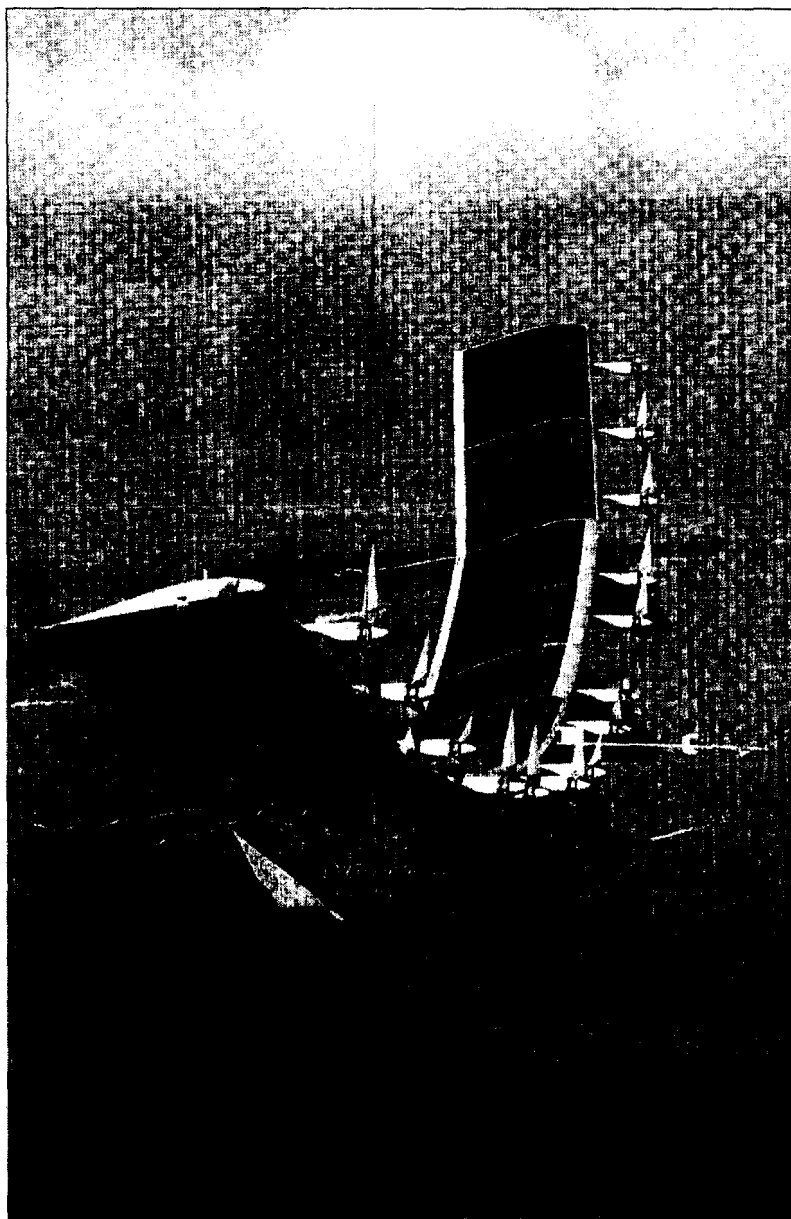
Designed and developed by Monrovia-based AeroVironment Inc. with funding from NASA, the airplane surpassed the previous altitude record at 5:21 p.m. PDT as it flew over the Pacific Ocean west of the Hawaiian islands. It continued to ascend and had reached 96,500 by 7:09 p.m. It then began its gradual descent, and was expected to touch down by morning.

In addition to making aviation history, the aircraft is expected to provide NASA with tantalizing clues about flying in an atmosphere similar to that of Mars. NASA eventually hopes to use flying machines to explore the surface of the planet.

### Plane Has Scientific, Commercial Interest

NASA also is interested in seeing how much higher it can take sophisticated science equipment aboard airplanes to study Earth's atmosphere for climate change and ozone depletion. Telecommunications companies are interested in the plane's ability to hover over an area for months at a time, high above the clouds and commercial aircraft traffic, enabling them to relay ultra-fast Internet, television and telephone signals directly to homes.

The aircraft was able to reach the record height thanks to its massive wing, spanning 247 feet—30 feet longer than the wings of the Boeing 747-400, the world's largest commercial airplane—while weighing only 1,577 pounds. The aircraft is mainly constructed of Kevlar, Styrofoam and plastic film to cover the wing. The top of the



NASA

The 247-foot Helios wing is covered with solar panels, which power the 14 small propellers.

wing is laden with 62,000 solar panels, which provide power to the electric propeller motors. Five pods under the wing hold the fuel cells and the landing gears.

Monday's flight came as the U.S. Air Force officially squashed decades-long speculation that the SR-71 had reached an altitude of 100,000 feet or more, giving Helios the undisputed record.

Although aviation buffs have maintained for years that an SR-71 secretly has been flown higher than publicly disclosed, an Air Force official said last week that the airplane could not sustain a flight beyond the record set in 1976. Indeed, a flight manual for the SR-71, portions of which recently were declassified, warn pilots not to exceed the maximum altitude of 85,000 feet.

The plane took off from the U.S. Navy's Pacific Missile

Range Facility on the Hawaiian island of Kauai at 8:48 a.m. local time, or 11:48 a.m. PDT, after a 38-minute delay as operators waited for clouds to clear. The cloud cover kept the solar cells from developing enough electricity to power the propellers for a takeoff.

### Flights Postponed, Then Finally Liftoff

The flight already had been postponed twice—first Saturday when heavy clouds and some technical problems forced NASA to scrub the mission and then Sunday as high-level cirrus clouds lingered over the island. Operators feared that the cirrus clouds, made mostly of ice crystals, would hamper the flight because they would have added weight to the plane and reduced its lift.

Monday morning, the chance

for the record flight came as the low-hanging clouds cleared momentarily, providing enough solar power to launch the aircraft. But it was a tense 37 minutes before the airplane broke through the broad cloud layer and into the clear sky, prompting NASA officials to sigh with relief.

"We managed to climb above the cloud coverage," a dispatch from the operator said as the plane climbed to 5,000 feet. "We are so relieved!"

From then on, the Helios climbed steadily, though some turbulence jolted wary NASA operators who had been up all night preparing for the historic flight.

Then at 2:21 p.m. local time, or 5:21 p.m. PDT, Helios climbed past the 25-year-old milestone.

"They've reached the record," said Alan Brown, a NASA spokesman from Kauai, as he relayed the events via telephone.

National Aeronautics and  
Space Administration  
**Office of the Administrator**  
Washington, DC 20546-0001



SEP 21 2001

TO: Dryden Flight Research Center and  
AeroVironment Team

FROM: A/Administrator

SUBJECT: Helios

On August 13, 2001, when Helios set the world altitude record at 96,500 feet, the NASA Dryden and AeroVironment Team proved beyond a doubt that extreme altitudes were no longer the province of rocket-powered vehicles and balloons. Combining solar power and lightweight structures, the Helios confronted the challenge of unknown aerodynamics, and demonstrated flight in an environment that no ground test facility could duplicate and that no computer could accurately predict. You have blazed a trail that many will follow.

NASA Dryden's contributions to the success of this campaign were enormous. A few short months ago your team faced substantial technical challenges. The flight vehicle had new propellers and solar cells. The team had not flown in over a year. Each day spent in preparation meant that the next day would be even shorter, with less sunlight and, hence, less solar energy available for the high-altitude attempt.

Yet, the NASA and AeroVironment Team stayed focused on mission safety. Your attention to such diverse factors as crew fatigue, range safety, and accurate weather forecasting played a significant role in the ultimate success of the mission. Finding a low-cost method of supplementing the telemetry system with an additional tracking antenna increased the safety of the system and added thousands of feet to Helios' critical altitude performance. Well done! I commend you on your dedication, discipline, and professionalism.

Please accept my hearty congratulations for your role in accomplishing this truly magnificent milestone in aviation.

A handwritten signature in black ink, appearing to read "Daniel S. Goldin", written over a horizontal line.

Daniel S. Goldin

## CERTIFICATE OF SERVICE

I, Diane Uduebor, hereby certify that on this 3<sup>rd</sup> day of October, 2001, a copy of the foregoing was served by first class mail, postage pre-paid, on the following:

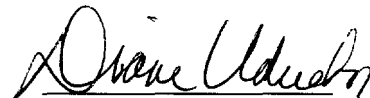
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